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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/628,200	07/28/2000	Junichi Takahashi	IZM-01001	3387

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EXAMINER

BATTAGLIA, MICHAEL V

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/628,200

Applicant(s)

TAKAHASHI ET AL.

Examiner

Michael V Battaglia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-15 is/are allowed.
- 6) ☒ Claim(s) 1 and 5-11 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This action, dated November 3, 2004, is in response to Applicant's amendment and Request for Continued Examination, filed July 16, 2004 and September 23, 2004, respectively. Claims 1 and 4-15 are pending.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Katayama (US 5,875,167).

In regard to claim 1, Katayama discloses an optical head comprising: (a) a light source (Fig. 25, element 107) for emitting a light beam to be irradiated to an optical recording medium (Fig. 23, element 7) as an incident light beam (Col. 19, lines 51-58); (b) a hologram element (Fig. 23, element 102 and Figs. 26A and 26B) for receiving a reflected light beam generated by reflection of said incident light beam on said medium to generate at least two diffracted light beams (Fig. 27, elements 128-131) for focusing error detection (Col. 24, lines 8-11) and at least two diffracted light beams (Fig. 27; elements 132-135) for tracking error detection (Col. 24, lines 11-12); and (c) an optical detector (Fig. 25, element 108) for detecting the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection (Fig. 27); said detector including a first receiving surface (Fig. 27, elements 116-123) for receiving the at least two diffracted light beams for focusing error detection and a second receiving surface (Fig. 27,

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elements 124-127) for receiving the at least two diffracted light beams for tracking error detection; each of said first and second receiving surfaces being divided into receiving regions (Fig. 27); the at least two diffracted light beams for focusing error detection being received at said receiving regions of said first receiving surface (Fig. 27); the at least two diffracted light beams for tracking error detection being received at said receiving regions of said second receiving surface (Fig. 27); wherein said hologram element has diffraction grating divided by at least one division line (Fig. 26A), said gratings having different grating patterns and at least one of said grating patterns being non-linear and having an offset center with respect to another of said grating patterns (Fig. 26A), and wherein the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection are generated by said gratings of said element (Col. 23, lines 40-44), and wherein said hologram element has a property of selectively exhibiting a diffraction grating function according to a polarization direction of said reflected light beam (Col. 20, line 60-Col. 21, line 5), and wherein the hologram element has a refractive index that varies according to the polarization direction (Fig. 26B, element 109 and Col. 23, lines 27-28). It is noted that a birefringence characteristic varies the refractive index according to a polarization direction (see Citation of Relevant Prior Art below).

In regard to claim 8, Katayama discloses an optical head comprising: (a) a light source (Fig. 25, element 107) for emitting a light beam to be irradiated to an optical recording medium (Fig. 23, element 7) as an incident light beam (Col. 19, lines 51-58); (b) a hologram element (Fig. 23, element 102 and Figs. 26A and 26B) including gratings divided by at least one division line, said gratings having different patterns, and wherein at least one of said patterns is non-linear and has an offset center with respect to another of said grating patterns (Fig. 26A); said element receiving a reflected light beam generated by reflection of said incident light beam on said medium (Col. 19,

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lines 58-62), thereby generating at least two diffracted light beams (Fig. 27, elements 128-131) for focusing error detection (Col. 24, lines 8-11) and at least two diffracted light beams (Fig. 27, elements 132-135) for tracking error detection (Col. 24, lines 11-12) by using said gratings (Col. 23, lines 40-44); (c) an optical detector (Fig. 25, element 108) for detecting the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection (Fig. 27); said detector including a first receiving surface (Fig. 27, elements 116-123) for receiving the at least two diffracted light beams for focusing error detection and a second receiving surface (Fig. 27, elements 124-127) for receiving the at least two diffracted light beams for tracking error detection; each of said first and second receiving surfaces being divided into receiving regions (Fig. 27); the at least two diffracted light beams for focusing error detection being received at said receiving regions of said first receiving surface (Fig. 27); the at least two diffracted light beams for tracking error detection being received at said receiving regions of said second receiving surface (Fig. 27); wherein said hologram element has a property of selectively exhibiting a diffraction grating function according to a polarization direction of said reflected light beam (Col. 20, line 60-Col. 21, line 5), and wherein the hologram element has a refractive index that varies according to the polarization direction (Fig. 26B, element 109 and Col. 23, lines 27-28). It is noted that a birefringence characteristic varies the refractive index according to a polarization direction (see Citation of Relevant Prior Art below).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katayama in view of Fukakusa et al (hereafter Fukakusa) (US 5,687,155).

Katayama discloses an optical head as claimed in claim 1 that has a package (Fig. 25, element 50) containing the light source and optical detector mounted on a base (Fig. 25, element on which the optical detector is disposed). Katayama does not disclose that the package has a positioning mechanism, wherein said package is mounted on the base using said positioning mechanism (claim 5); that the base has a hole into which the package is inserted (claim 6); and that the optical head further comprises a heat dissipation member (claim 7).

In regard to claim 5, Fukakusa discloses an optical head having at least a light source and an optical detector located in a package having a positioning mechanism; wherein said package is mounted on a base using said positioning mechanism (Fig. 7 and Col. 8, lines 15-47). The examiner interprets the optical member (Figs. 2 and 7, element 10) having the light source (Fig. 2 and 7, element 1) and optical detectors (Fig. 2, elements 2a-2d and 3a-3d and Col. 8, lines 23-24) as the package, the bobbin (Fig. 7, element 60) as the base, and the fixing parts of the optical member and bobbin (Fig. 7, elements 17 and 61 and Col. 8, lines 38-39) as the positioning mechanism.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to mount the package of Katayama onto the base of Fukakusa using the positioning mechanism of Fukakusa, the motivation being to fit the package into a fixed position.

In regard to claim 6, Fukakusa discloses that the base has a hole into which said package is inserted; and wherein an inner wall of said hole is substantially equal in shape and size to an outer wall of said package; wherein said inner wall of said hole has an engaging part and said outer wall of said package has a corresponding engaging part; and wherein said package is positioned at a desired location with respect to said base by engagement between said engaging parts of said hole and said package (Fig. 7 and Col. 8, lines 15-47). The examiner interprets the bobbin fixing part (Fig. 7, element 61) as the engaging part of the inner wall of the hole in the base and the optical member fixing part (Fig. 7, element 17) as the engaging part of the outer wall of the package. In addition, Fukakusa teaches that by fitting the package into the hole in the base, the light source can be sealed off from the atmosphere, which improves reliability by reducing the risk of shortening the life or breakdown of the light source due to steam or corrosive gas contained in the atmosphere (Col. 8, lines 38-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the package of Katayama into a hole in the base; wherein an inner wall of said hole is substantially equal in shape and size to an outer wall of said package; and wherein said inner wall of said hole has an engaging part and said outer wall of said package has a corresponding engaging part; and wherein said package is positioned at a desired location with respect to said base by engagement between said engaging parts of said hole and said package as suggested by Fukakusa, the motivation being to fit the package into a fixed position while sealing off the light source from the atmosphere, thereby improving reliability by reducing the risk of shortening the life or breakdown of the light source due to steam or corrosive gas contained in the atmosphere.

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In regard to claim 7, Fukukusa discloses that the optical head further comprises a heat dissipation member for dissipating heat generated by said light source (Fig. 7, element 18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the optical head of Katayama a heat dissipation member for dissipating heat generated by said light source as suggested by Fukakusa, the motivation being to dissipate heat generated by the light source.

3. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katayama as applied to claim 8, and further in view of Maeda et al (hereafter Maeda) (US 5,956,302) and further in view of Fukakusa.

In regard to claim 9, Katayama discloses an optical head as claimed in claim 8 that has a light source (Fig. 25, element 107) and an optical detector (Fig. 25, element 108) located in a package (Fig. 25, element 50). Kurata does not disclose that the package is a plastic package or that the package has a positioning mechanism, wherein said package is mounted on a base using said positioning mechanism.

Maeda discloses an optical head that includes a light source and an optical detector located in a plastic package (Fig. 25, element 17). Maeda teaches that by making the package out of plastic, the optical head is lightweight (Col. 24, lines 38-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the package of Katayama a plastic package as suggested by Maeda, the motivation being to make the optical head lightweight.

Fukakusa discloses an optical head having at least a light source and an optical detector located in a package having a positioning mechanism; wherein said package is mounted on a base using said positioning mechanism (Fig. 7 and Col. 8, lines 15-47). The examiner interprets the

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optical member (Figs. 2 and 7, element 10) having the light source (Fig. 2 and 7, element 1) and optical detectors (Fig. 2, elements 2a-2d and 3a-3d and Col. 8, lines 23-24) as the package, the bobbin (Fig. 7, element 60) as the base, and the fixing parts of the optical member and bobbin (Fig. 7, elements 17 and 61 and Col. 8, lines 38-39) as the positioning mechanism.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to mount the plastic package of Katayama in view of Maeda onto the base of Fukakusa using the positioning mechanism of Fukakusa, the motivation being to fit the package into a fixed position.

In regard to claim 10, Katayama in view of Maeda and further in view of Fukakusa as applied to claim 9 does not disclose that the base has a hole into which the package is inserted.

Fukakusa discloses that the base has a hole into which said package is inserted; and wherein an inner wall of said hole is substantially equal in shape and size to an outer wall of said package; wherein said inner wall of said hole has an engaging part and said outer wall of said package has a corresponding engaging part; and wherein said package is positioned at a desired location with respect to said base by engagement between said engaging parts of said hole and said package (Fig. 7 and Col. 8, lines 15-47). The examiner interprets the bobbin fixing part (Fig. 7, element 61) as the engaging part of the inner wall of the hole in the base and the optical member fixing part (Fig. 7, element 17) as the engaging part of the outer wall of the package. In addition, Fukakusa teaches that by fitting the package into the hole in the base, the light source can be sealed off from the atmosphere, which improves reliability by reducing the risk of shortening the life or breakdown of the light source due to steam or corrosive gas contained in the atmosphere (Col. 8, lines 38-47).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the plastic package of Katayama in view of Maeda and further in view of Fukakusa into a hole in the base; wherein an inner wall of said hole is substantially equal in shape and size to an outer wall of said package; and wherein said inner wall of said hole has an engaging part and said outer wall of said package has a corresponding engaging part; and wherein said package is positioned at a desired location with respect to said base by engagement between said engaging parts of said hole and said package as suggested by Fukakusa, the motivation being to fit the package into a fixed position while sealing off the light source from the atmosphere, thereby reducing the risk of shortening the life or breakdown of the light source due to steam or corrosive gas contained in the atmosphere.

In regard to claim 11, Katayama in view of Maeda and further in view of Fukakusa as applied to claim 10 does not disclose that the optical head further comprises a heat dissipation member.

Fukukusa discloses that the optical head further comprises a heat dissipation member for dissipating heat generated by said light source (Fig. 7, element 18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the optical head of Katayama in view of Maeda and further in view of Fukakusa a heat dissipation member for dissipating heat generated by said light source as suggested by Fukakusa, the motivation being to dissipate heat generated by the light source.

Citation of Relevant Prior Art

4. Aoyama et al (US 5,122,903) disclose that a birefringence characteristic varies the refractive index according to a polarization direction (Col. 7, lines 60-64 and Col. 8, lines 3-9). Shih et al

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(US 6,369,377) disclose an optical head comprising a hologram element including a first diffraction surface and a second diffraction surface on an opposite surface thereof, said first and second gratings having different patterns, wherein the hologram element selectively exhibits a diffraction grating function according to a polarization direction and has a birefringence characteristic (Figs. 5a and 5b). Hatano et al (US 2003/0039034) disclose different diffraction gratings on opposite sides of a base plate (Fig. 1). Dang et al (US 5,953,304) disclose a diffraction element that focuses a return beam onto a photodetector using different diffraction gratings on opposite sides of the diffraction element (Fig. 4).

Allowable Subject Matter

5. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims: None of the references of record alone or in combination disclose or suggest an optical head comprising: a hologram element for receiving a reflected light beam generated by reflection of said incident light beam on said medium to generate at least two diffracted light beams for focusing error detection and at least two diffracted light beams for tracking error detection; wherein said hologram element has diffraction grating divided by at least one division line, said gratings having different grating patterns and at least one of said grating patterns being non-linear and having an offset center with respect to another of said grating patterns, and wherein the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection are generated by said gratings of said element, and wherein said hologram element has a property of selectively exhibiting a diffraction grating function according to a polarization direction of said reflected light beam, and wherein the hologram element has a

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refractive index that varies according to the polarization direction; **wherein the hologram element has a first diffraction grating on a surface of said element and a second diffraction grating on an opposite surface thereof.**

6. Claims 12-15 are allowable over the prior art of record. None of the references of record alone or in combination disclose or suggest an optical head comprising: (b) a hologram element including, **a first diffraction grating on a surface of said element and a second diffraction grating on an opposite surface thereof, said first and second gratings having different patterns** and wherein at least one of said patterns is nonlinear and has an offset center with respect to the other diffraction grating pattern; said element receiving a reflected light beam generated by reflection of said incident light bears on said medium, thereby generating at least two diffracted light beams for focusing error detection and at least the diffracted light beams for tracking error detection by using said first and second gratings; (c) an optical detector for detecting the at least two diffracted light beams for focusing error detection and the at least two diffracted light beams for tracking error detection; said detector including a first receiving surface for receiving the at least two diffracted light beams for focusing error detection and a second receiving surface for receiving the at least two diffracted light beams for tracking error detection; each of said first and second receiving surfaces being divided into receiving regions; the at least two diffracted light beams for focusing error detection being received at said receiving regions of said first receiving surface; the at least two diffracted light beams for tracking error detection being received at said receiving regions of said second receiving surface; wherein said hologram element has a property of selectively exhibiting a diffraction grating function according to a polarization direction of said reflected light beam, and wherein the hologram element has a refractive index that varies according to the polarization direction.

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Response to Arguments


7. Applicant's arguments with respect to claims 1 and 5-11 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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11/15/04